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| 09/938,415      | 08/23/2001  | Kenneth C. Johnson   | SEN-012             | 9943             |

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EXAMINER

SEVER, ANDREW T

ART UNIT PAPER NUMBER

2851

DATE MAILED: 09/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/938,415

Applicant(s)

JOHNSON ET AL.

Examiner

Andrew T Sever

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The drawings were received on 7/17/2003. These drawings are not acceptable. Applicant's changes to the drawings according to the objections raised in the office action mailed on 4/18/2003 are appreciated. However a further review of the application has revealed further objections to the drawings, which will be raised in the following objections and applicant's argument with respect to figure 1 was not found persuasive and so that objection will be repeated.
2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). **A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.**

Although figure 1 shows both the prior art and the current invention, it should be labeled as prior art, since it shows only that which is old. Applicants argue that aperture 107 can be both a prior art aperture and the new aperture and therefore figure 1 also shows that which is new. This argument is wrong, since figure 1 only serves to show the placement of the aperture in a metrology instrument of the prior art. Figure 1 does not show the alleged novel feature of the aperture (that of being an elongated pupil aperture) rather it only shows the placement/relationship of both a prior art aperture and the alleged novel aperture with respect to a metrology instrument that applicant specifies is prior art. Since

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both a prior art aperture and the alleged novel aperture are disposed in the same position and one with ordinary skill in the art would not be able to determine which is in place in figure 1; figure 1 shows only that which is old and known: specifically that apertures are placed after the light source and before the beam splitter in metrology instruments of the type shown in figure 1.

**A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.**

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the means for supporting a sample in measurement relation to the instrument must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Although it is inherent that the grating structure shown in figure one is on a sample and is presumably supported, both the sample and the support structure must be drawn.

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the optical means for

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collecting the optical signature must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Box 106 is specified to be a radiation-sensing detector. It is assumed that somewhere in the box optical means reside, however since applicant has claimed the optical means and not the radiation sensing detector, applicant must show the optical means which would comprise of lenses, light pipes, and other such components.

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the processing means must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Applicant claims a processing means, and an optical means for collecting, detecting and processing the optical signature from the grating-like microstructure on the sample, however figure 1 shows one box (106) which is specified to be a radiation sensing detector. One with ordinary skill in the art would assume that this is only a collecting means and that the processing means would reside in yet a further box.

***Claim Rejections - 35 USC § 112***

6. Claims 1-5 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Independent claim 1 claims a metrology instrument with processing means for determining the parameters of interest of the grating-like microstructure on a sample. Applicant has failed to specify and claim what those parameters of interest are and what the processing means is. The claim is not enabled by figure 1, since a labeled box with an attributed function does not disclose a “processing means”. One with ordinary skill in the art could not reproduce the “processing means” without undue experimentation since the specification does not teach what that processing means is or even what specific parameters the applicant’s processing means is designed to process.

Further applicant fails to specify what form the optical means for detecting the optical signature from the illuminated sample takes. Applicant only specifies that in figure 1 box 106 is a radiation-sensing detector. Is it a Geiger counter? Is it a photo detector, Photographic film? One of ordinary skill in the art at the time the invention was made would recognize that each of these well known radiation sensing detectors has a very different output and would require a very different processing means (for example the processing means for the photographic film would be a photo analyst, while for a Geiger counter would most likely be a statistical program running on a PC).

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Applicant is directed to In re Brandstadter, Kienzle, and Sykes (179 USPQ 286) and to In re Ghiron (169 USPQ 723).

Claims 2-5 are rejected due to their dependency on claim 1 and in the case of claim 2 also claiming the radiation-sensing detector.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant claims in independent claim 1 a processing means for determining from said detected signature the parameters of interest of the grating-like microstructure on the sample. Applicant does not claim what those parameters are nor does applicant specify what they are. Since there is a great variety of parameters as evidenced by the applicants own short list of possible parameters in the specification which uses open language to include an infinite amount of additional parameters not listed, the claim is indefinite; since one of ordinary skill in the art would not know what parameters of interests the metrology instrument is to be designed to be able to detect. It should be noted that the device as claimed and drawn in figure 1 could be used to both detect defects in a device (such as in a wafer in semiconductor manufacturing) and for such things as reading line widths. The former is classified in classes 356

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subclasses 237.2, 237.4, 237.5, while the later is classified in such subclasses as 625, 630, 632, 635, 636, and 601 of class 356.

Claims 2-5 are dependent on claim 1 and are therefore also indefinite.

### *Conclusion*

9. No prior art rejection is being provided since it is unclear what the processing means is, what the optical means is, what kind of light is being used, what the parameters of interests are, and even what in general the sample comprises of (for example is the sample a wafer as is known in the photo-lithography arts or is it a piece of sheet metal?) Applicant should review the following prior art, which with or without the prior art cited in the previous office action mailed on 4/18/2003, may form the basis of a prior art rejection if the 35 USC 112 rejections are withdrawn.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6,256,100 to Banet et al. teaches a method for measuring a structure which includes a linear pattern of elements. In figure 7a Banet shows that this method comprises of shining an elongated illumination spot having a respective long direction, which is traverse to the linear elements of the microstructure.



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US 6,081,325 to Leslie et al. teaches in figure 9c shining an elongated illumination spot having a respective long direction which is also traverse to the linear elements of the microstructure. Leslie also teaches moving the support structure so that the spot scans the entire sample to be measured.

***Response to Arguments***

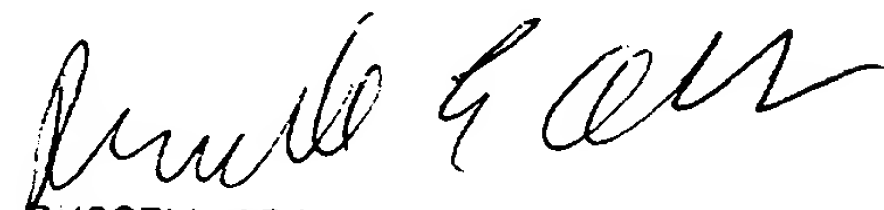
11. Applicant's arguments with respect to claim 1-5 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Sever whose telephone number is 703-305-4036. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russell Adams can be reached on 703-308-2847. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

AS

  
RUSSELL ADAMS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800